

Updated quality criteria for S_{Hmax} orientation measurements (from Lund Sneek and Zoback, 2020, *Nat. Comms.*)

STRESS INDICATOR: ^a		A	B	C
Drilling-Induced Tensile Fractures (DIF)		Ten or more distinct tensile fractures in a single well with standard deviation (sd) $\leq 12^\circ$ and with highest and lowest observations at least 300 m apart	At least six distinct tensile fractures in a single well with sd $\leq 20^\circ$ and with highest and lowest observations at least 100 m apart	At least four distinct tensile fractures in a single well with sd $\leq 25^\circ$ and with highest and lowest observations at least 30 m apart
	(Directions)	Formal inversion of ≥ 35 reasonably well-constrained focal mechanisms resulting in stress directions with sd $\leq 12^\circ$	Formal inversion of ≥ 25 reasonably well-constrained focal mechanisms resulting in stress directions with sd $\leq 20^\circ$	Formal inversion of ≥ 20 reasonably well-constrained focal mechanisms resulting in stress directions with sd $\leq 25^\circ$
Focal Mechanism Inversions (FMI)	(Relative Magnitude, ϕ or A_ϕ)	Formal inversion of ≥ 35 reasonably well-constrained focal mechanisms resulting in ϕ with sd ≤ 0.05	Formal inversion of ≥ 25 reasonably well-constrained focal mechanisms resulting in ϕ with sd ≤ 0.1	Formal inversion of ≥ 20 reasonably well-constrained focal mechanisms resulting in ϕ with sd ≤ 0.2
Wellbore Breakouts (BO)		Ten or more distinct breakout zones in a single well (or breakouts in two or more wells in close proximity) with sd $\leq 12^\circ$ and with highest and lowest observations at least 300 m apart	At least six distinct breakout zones in a single well with sd $\leq 20^\circ$ and with highest and lowest observations at least 100 m apart	At least four distinct breakout zones in a single well with sd $\leq 25^\circ$ and with highest and lowest observations at least 30 m apart
Hydraulic Fractures	Open-hole Hydraulic Fracturing Stress Orientation (HF)	Four or more hydraulic fractures in a single well (or average of hydraulic fracture orientations for two or more wells in close geographic proximity) with sd $\leq 12^\circ$	Three or more hydraulic fractures in a single well (or average of hydraulic fracture orientations for two or more wells in close geographic proximity) with sd $\leq 20^\circ$	Two or more hydraulic fracture orientations in a single well with $20^\circ < \text{sd} \leq 25^\circ$. If a distinct orientation change with depth, the deepest measurements assumed valid
	Hydraulic Fractures Observed in Nearby Sub-horizontal Wellbores (HFH)	Twelve or more distinct hydraulic fractures in a single well (or average of hydraulic fracture orientations for two or more wells in close geographic proximity) with sd $\leq 12^\circ$	Eight or more distinct hydraulic fractures in a single well (or average of hydraulic fracture orientations for two or more wells in close geographic proximity) with sd $\leq 20^\circ$	Six or more distinct hydraulic fractures in a single well (or average of hydraulic fracture orientations for two or more wells in close geographic proximity) with sd $\leq 25^\circ$
	Microseismic Alignments Along Hydraulic Fractures (HFS)	Twelve or more distinct linear zones associated with HF stages, with sd $\leq 12^\circ$	Eight or more distinct linear zones associated with HF stages, with sd $\leq 20^\circ$	Six or more distinct linear zones associated with HF stages, with sd $\leq 25^\circ$
Shear Velocity Anisotropy from Crossed-Dipole Logs (SWA) ^b		Anisotropy $\geq 2\%$ present at a consistent azimuth, with highest and lowest observations at least 300 m apart, and with sd of fast azimuth $\leq 12^\circ$	Anisotropy $\geq 2\%$ present at a consistent azimuth, with highest and lowest observations at least 100 m apart, and with sd of fast azimuth $\leq 20^\circ$	Anisotropy $\geq 2\%$ present at a consistent azimuth, with highest and lowest observations at least 30 m apart, and with sd of fast azimuth $\leq 25^\circ$

^a For all indicators except for hydraulic fractures induced and measured in open holes (HF), the shallowest measurement must be at least 100 m deep and also sufficiently deep that measurements are not affected by topography. For open-hole hydraulic fracturing stress orientations (HF), the shallowest measurement must be ≥ 300 m depth.

^b In addition to anisotropy $\geq 2\%$, measurements should ideally have an energy difference between fast and slow shear waves $\geq 50\%$ and a minimum energy $\geq 15\%$.